

Practice: 381 - Silvopasture**Scenario: #1 - Commercial thinning, establish native grasses****Scenario Description:**

Commercial thinning of an existing stand of trees followed by establishment of native grasses.

Before Situation:

10-acre pine plantation that is overstocked, with a basal area of 100 sq. ft. per acre. There is very little available forage for livestock, due to the dense shade of the tree canopy. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition, Wildfire Hazard, Excessive Biomass Accumulation; Livestock Production Limitation - Inadequate Feed and Forage, and Inadequate Livestock Shelter.

After Situation:

The stand is thinned commercially to a basal area of 50 sq. ft. per acre, which will allow adequate sunlight to the forest floor for grass production, yet still provide shade and some protection from the elements for livestock and wildlife. Since thinning is done commercially, no harvesting costs are incurred. Debris is removed, all tree cutting will leave the shortest possible stump height. The soil is prepared for planting using chemical and mechanical means, then a mix of native warm-season grasses will be established, providing forage to livestock and wildlife. All Resource Concerns listed above are addressed.

Scenario Feature Measure: Acres of silvopasture established

Scenario Unit: Acre

Scenario Typical Size: 10

Scenario Cost: \$7,264.06

Scenario Cost/Unit: \$726.41

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$8.34	10	\$83.40
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.70	10	\$67.00
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.03	10	\$60.30
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$10.96	10	\$109.60
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$21.01	2	\$42.02
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$9.99	10	\$99.90
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$103.18	8	\$825.44
Materials						
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.59	500	\$295.00
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.78	500	\$390.00
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	\$220.98	10	\$2,209.80
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.63	10	\$156.30
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	\$143.05	20	\$2,861.00

Materials

Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acre	\$6.43	10	\$64.30
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Practice: 381 - Silvopasture**Scenario: #2 - Commercial thinning, establish introduced grasses****Scenario Description:**

Commercial thinning of an existing stand of trees followed by establishment of introduced grasses.

Before Situation:

10-acre pine plantation that is overstocked, with a basal area of 100 sq. ft. per acre. There is very little available forage for livestock, due to the dense shade of the tree canopy. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition, Wildfire Hazard, Excessive Biomass Accumulation; Livestock Production Limitation - Inadequate Feed and Forage, and Inadequate Livestock Shelter.

After Situation:

The stand is thinned commercially to a basal area of 50 sq. ft. per acre, which will allow adequate sunlight to the forest floor for grass production, yet still provide shade and some protection from the elements for livestock and wildlife. Since thinning is done commercially, no harvesting costs are incurred. Debris is removed, all tree cutting will leave the shortest possible stump height. The soil is prepared for planting using chemical and mechanical means, then a mix of introduced grass and legume species will be established, providing forage to livestock and wildlife. All Resource Concerns listed above are addressed.

Scenario Feature Measure: Acres of silvopasture established

Scenario Unit: Acre

Scenario Typical Size: 10

Scenario Cost: \$5,550.76

Scenario Cost/Unit: \$555.08

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$9.99	10	\$99.90
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$10.96	10	\$109.60
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.70	10	\$67.00
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$8.34	10	\$83.40
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.03	10	\$60.30
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$21.01	2	\$42.02
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$103.18	8	\$825.44
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.63	10	\$156.30
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.78	500	\$390.00
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acre	\$6.43	10	\$64.30
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	\$143.05	20	\$2,861.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.59	500	\$295.00

Materials

Four Species Mix, Cool Season, Introduced Perennial (2 grasses, 2 legumes)	2317	Cool season grass and legume mix. Includes material and shipping only.	Acre	\$49.65	10	\$496.50
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Practice: 381 - Silvopasture**Scenario: #7 - Establish hardwood trees and native grasses in an open field****Scenario Description:**

Establishment of trees and native grasses into a field that contains neither suitable forage nor suitable tree cover for a silvopasture system.

Before Situation:

10-acre crop field to be converted to silvopasture. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition, Wildfire Hazard, Excessive Biomass Accumulation; Livestock Production Limitation - Inadequate Feed and Forage, and Inadequate Livestock Shelter.

After Situation:

The soil is prepared for planting using chemical and mechanical means, then a mix of native warm-season grasses will be established, providing forage to livestock and wildlife. Trees will be planted at the proper spacing and arrangement to be managed for silvopasture providing adequate livestock shelter and a commercially viable timber product or tree crop over the long term. All Resource Concerns listed above are addressed.

Scenario Feature Measure: Acres of silvopasture established

Scenario Unit: Acre

Scenario Typical Size: 10

Scenario Cost: \$12,251.88

Scenario Cost/Unit: \$1,225.19

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$24.37	4	\$97.48
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.70	10	\$67.00
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.03	10	\$60.30
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$9.99	10	\$99.90
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$21.01	2	\$42.02
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	\$6.60	4	\$26.40
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$8.34	10	\$83.40
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$10.96	10	\$109.60
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	8	\$153.68
Materials						
Stakes, wood, 3/4" x 3/4" x 48"	1582	3/4" x 3/4" x 48" wood stakes to fasten items in place. Includes materials only.	Each	\$1.16	1000	\$1,160.00
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.78	500	\$390.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.59	500	\$295.00
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	\$143.05	20	\$2,861.00
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.63	10	\$156.30

Materials

Tree shelter, solid tube type, 4" x 48"	1566	4" x 48" tree tube for protection from animal damage. Materials only.	Each	\$4.10	1000	\$4,100.00
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	\$220.98	10	\$2,209.80
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	\$0.34	1000	\$340.00

Practice: 381 - Silvopasture**Scenario: #8 - Establish conifer trees, introduced grasses and legumes in an open field****Scenario Description:**

Establishment of trees and introduced grasses and legumes into a field that contains neither suitable forage nor suitable tree cover for a silvopasture system.

Before Situation:

10-acre crop field to be converted to silvopasture. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition, Wildfire Hazard, Excessive Biomass Accumulation; Livestock Production Limitation - Inadequate Feed and Forage, and Inadequate Livestock Shelter.

After Situation:

The soil is prepared for planting using chemical and mechanical means, then a mix of introduced grass and legumes species will be established, providing forage to livestock and wildlife. Trees will be planted at the proper spacing and arrangement to be managed for silvopasture providing adequate livestock shelter and a commercially viable timber product or tree crop over the long term. All Resource Concerns listed above are addressed.

Scenario Feature Measure: Acres of silvopasture established

Scenario Unit: Acre

Scenario Typical Size: 10

Scenario Cost: \$5,378.58

Scenario Cost/Unit: \$537.86

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$24.37	4	\$97.48
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$21.01	2	\$42.02
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.03	10	\$60.30
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$9.99	10	\$99.90
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$10.96	10	\$109.60
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	\$6.60	4	\$26.40
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.70	10	\$67.00
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$8.34	10	\$83.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	8	\$153.68
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.63	10	\$156.30
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.78	500	\$390.00
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	\$143.05	20	\$2,861.00
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	\$0.13	2000	\$260.00

Materials

Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	\$0.09	2000	\$180.00
Four Species Mix, Cool Season, Introduced Perennial (2 grasses, 2 legumes)	2317	Cool season grass and legume mix. Includes material and shipping only.	Acre	\$49.65	10	\$496.50
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.59	500	\$295.00

Practice: 381 - Silvopasture**Scenario: #9 - Establish hardwood trees in an existing pasture with adequate forage****Scenario Description:**

Establishment of trees into an existing pasture that contains adequate native or introduced forage.

Before Situation:

10-acre pasture has inadequate livestock shelter resulting in loafing and overuse and wear of pasture on partially shaded field boundary. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Livestock Production Limitation - Inadequate Livestock Shelter.

After Situation:

Appropriate tree species are selected and the spacing and layout arrangement is determined for optimum stem density. The existing pasture sod is suppressed by mechanical or chemical means to provide competition control to benefit tree seedling growth. Trees are planted and properly protected until they are established well enough to allow livestock grazing without significant stand loss. All Resource Concerns listed above are addressed.

Scenario Feature Measure: Acres of silvopasture established

Scenario Unit: Acre

Scenario Typical Size: 10

Scenario Cost: \$6,108.12

Scenario Cost/Unit: \$610.81

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.03	2	\$12.06
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	\$11.62	40	\$464.80
Materials						
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	\$0.34	1000	\$340.00
Tree shelter, solid tube type, 4" x 48"	1566	4" x 48" tree tube for protection from animal damage. Materials only.	Each	\$4.10	1000	\$4,100.00
Stakes, wood, 3/4" x 3/4" x 48"	1582	3/4" x 3/4" x 48" wood stakes to fasten items in place. Includes materials only.	Each	\$1.16	1000	\$1,160.00
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.63	2	\$31.26

Practice: 381 - Silvopasture**Scenario: #10 - Establish conifer trees in an existing pasture with adequate forage****Scenario Description:**

Establishment of trees into an existing pasture that contains adequate native or introduced forage.

Before Situation:

10-acre pasture has inadequate livestock shelter resulting in loafing and overuse and wear of pasture on partially shaded field boundary. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Livestock Production Limitation - Inadequate Livestock Shelter.

After Situation:

Appropriate tree species are selected and the spacing and layout arrangement is determined for optimum stem density. The existing pasture sod is suppressed by mechanical or chemical means to provide competition control to benefit tree seedling growth. Trees are planted and properly protected until they are established well enough to allow livestock grazing without significant stand loss. All Resource Concerns listed above are addressed.

Scenario Feature Measure: Acres of silvopasture established

Scenario Unit: Acre

Scenario Typical Size: 10

Scenario Cost: \$943.13

Scenario Cost/Unit: \$94.31

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.03	2.7	\$16.28
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	\$11.62	30	\$348.60
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	5	\$96.05
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.63	2.7	\$42.20
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	\$0.13	2000	\$260.00
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	\$0.09	2000	\$180.00